APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/901,988	07/10/2001	Clive Tang	NC17536	7923

30973	7590	10/27/2005

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EXAMINER
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ART UNIT	PAPER NUMBER
2637	

DATE MAILED: 10/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>18 July 2005</u>.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1 - 11, 13 - 21</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1 - 11, 13 - 21</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>18 July 2005</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 1- 5, 9 – 11, 12, 16 - 18 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

1.   Claim 1 – 11, 13 – 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Balachandran et al (US-6,108,374).

With regard to claim 1, Balachandran discloses an apparatus for a 1st communication station operable to transmit data upon a communication channel, apparatus for dynamically selecting at least a 1st switching used in selection of a modulation parameter (see column 10, line 57 – column 11, line 35), apparatus comprising: a calculator adapted to received indications of a selected communication indicia associated with communication characteristics of communication channel during a selected interval (see figure 12, 212 and column 11, lines 1- 7), calculator configured to select at least the 1st switching threshold (see column 11, lines 7 –9), 1st switching threshold changeable responsive to changes in selected communications indicia (see column 11, lines 28 – 35), and 1st switching threshold selected by calculator to at least satisfy a 1st and 2nd performance criteria (see column 9, lines 1 – 30). While nomenclature of Balachandran is different than that of applicant, the functionality appears equivalent and therefore would have been obvious to one of ordinary skill in the art at the time of invention.

With regard to claim 2, Balachandran discloses an apparatus wherein selection of 1st selection criteria by calculator maximizes the 1st performance criteria while also satisfying at

least the 2nd performance criteria (see column 11, lines 1 – 7, where this is interpreted as 1st

and 2nd performance criteria).

With regard to claim 3, Balachandran discloses an apparatus wherein selected

communication indicia to which calculator is coupled to receive indications thereof comprises

error indicia representative of errors introduced upon data during communication upon

communication channel (see figure 12, 200, 210 and column 11, lines 1 – 7).

With regard to claim 4, Balachandran discloses an apparatus wherein data comprises

frame-formatted data and wherein calculator is coupled to receive error indicia.

Balachandran discloses the use of SINR as error indicia, but states FER is a valid alternative

(see column 9, lines 1 – 8). It would have been obvious to one of ordinary skill in the art at

the time of invention that FER would be a viable choice of error indicia.

With regard to claim 5, Balachandran discloses an apparatus wherein data transmitted

by 1st communication station is transmitted to 2nd communication station (see figure 12, 190,

196); wherein 2nd station is coupled to in a feedback arrangement with 1st communication to

return to the 1st communication station a report representative of the communication

characteristics of communication channel (see column 11, lines 1 – 7), and wherein selected

communication indicia to which calculator is coupled to receive is based upon report returned

to 1st communication station (see column 11, lines 7 –35).

With regard to claim 6, Balachandran discloses an apparatus for calculating and

reporting a moving average of received data (see column 11, lines 23 – 35). It would have

been obvious to one of ordinary in the art at the time of invention that there would be a lag

time in adjustment of parameters due to propagation delays.

With regard to claim 7, Balachandran is silent with respect to throughput indicia, as such.

Balachandran discloses his apparatus is intended to improve throughput and bandwidth

efficiency (see column 1, lines 25 – 33). It would have been obvious to one of ordinary skill in

the art at the time of invention to monitor throughput as a system criteria.

With regard to claim 8, Balachandran discloses an apparatus wherein selected

communication indicia to which calculator is coupled to receive error indicia. Balachandran

discloses the use of SINR as error indicia, but states FER is a valid alternative (see column 9,

lines 1 – 8). It would have been obvious to one of ordinary skill in the art at the time of

invention that FER would be a viable choice of error indicia.

With regard to claim 9, Balachandran discloses an apparatus comprising a modulation

parameter selector coupled to calculator (see figure 12, 192), modulation parameter selector

for selecting modulation parameter by which data is operated upon by 1st communication

station prior to transmission upon the communication channel (see column 11, lines 7 – 35).

With regard to claim 10, Balachandran discloses an apparatus wherein modulation

parameter comprises a modulation type by which the data is modulated by 1st communication

station (see column 10, lines 13 – 56).

With regard to claim 11, Balachandran discloses an apparatus wherein modulation

parameter comprises an encoding rate by which the data is encoded by 1st communication

station (see column 11, lines 28 – 35).

With regard to claim 13, Balachandran is silent with respect to LRI algorithm.

Balachandran discloses an apparatus utilizing an adaptive technique that "learns" (see

column 9, line 31 – column 10, line 11). While arrangement of Balachandran's functionality

differs slightly from applicant's claimed invention, it would have been obvious to one of

ordinary skill in the art at the time of invention to rearrange calculation functionality.

With regard to claim 14, Balachandran discloses two inputs to his algorithm (see figure

12, 200, 210). Balachandran is silent with respect to LRI algorithm. Balachandran discloses

an apparatus utilizing an adaptive technique that "learns" (see column 9, line 31 – column 10, line 11). While arrangement of Balachandran's functionality differs slightly from applicant's claimed invention, it would have been obvious to one of ordinary skill in the art at the time of invention to rearrange calculation functionality.

With regard to claim 15, Balachandran discloses two inputs to his algorithm (see figure 12, 200, 210). Balachandran is silent with respect to LRI algorithm. Balachandran discloses an apparatus utilizing an adaptive technique that "learns" (see column 9, line 31 – column 10, line 11). While arrangement of Balachandran's functionality differs slightly from applicant's claimed invention, it would have been obvious to one of ordinary skill in the art at the time of invention to rearrange calculation functionality.

With regard to claims 16 and 17, the steps claimed as method are nothing more than a restatement of the function of the specific components of the apparatus claimed above (claims 1 and 2, respectively) and, therefore it would have been obvious, considering the aforementioned rejection of claims 1 and 2.

With regard to claim 18, Balachandran discloses an apparatus wherein operation of selecting 1st switching threshold is performed by executing an algorithm (see column 11, lines 1 – 7). Balachandran is silent with respect to processor, however the use of an algorithm implies the use of a processor and therefore would have been obvious to one of ordinary skill in the art at the time of invention.

With regard to claim 19, Balachandran is silent with respect to LRI algorithm. Balachandran discloses an apparatus utilizing an adaptive technique that "learns" (see column 9, line 31 – column 10, line 11). While arrangement of Balachandran's functionality differs slightly from applicant's claimed invention, it would have been obvious to one of ordinary skill in the art at the time of invention to rearrange calculation functionality.

With regard to claim 20, Balachandran discloses two inputs to his algorithm (see figure 12, 200, 210). Balachandran is silent with respect to LRI algorithm. Balachandran discloses an apparatus utilizing an adaptive technique that "learns" (see column 9, line 31 – column 10, line 11). While arrangement of Balachandran's functionality differs slightly from applicant's claimed invention, it would have been obvious to one of ordinary skill in the art at the time of invention to rearrange calculation functionality.

With regard to claim 21, Balachandran discloses an apparatus for a 1st communication station operable to transmit data upon a communication channel, apparatus for dynamically selecting at least a 1st switching used in selection of a modulation parameter (see column 10, line 57 – column 11, line 35), apparatus comprising: a calculator adapted to received indications of a selected communication indicia associated with communication characteristics of communication channel during a selected interval (see figure 12, 212 and column 11, lines 1- 7), calculator configured to select at least the 1st switching threshold (see column 11, lines 7 –9), 1st switching threshold changeable responsive to changes in selected communications indicia (see column 11, lines 28 – 35), and 1st switching threshold selected by calculator to at least satisfy a 1st and 2nd performance criteria (see column 9, lines 1 – 30). Balachandran is silent with respect to processor, however the use of an algorithm implies the use of a processor and therefore would have been obvious to one of ordinary skill in the art at the time of invention. Balachandran is silent with respect to LRI algorithm. Balachandran discloses an apparatus utilizing an adaptive technique that "learns" (see column 9, line 31 – column 10, line 11). While arrangement of Balachandran's functionality differs slightly from applicant's claimed invention, it would have been obvious to one of ordinary skill in the art at the time of invention to rearrange calculation functionality.

Other Cited Prior Art

2.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

Edwards et al (US-6,198,734) discloses an adaptive radio communications systems that

discloses many aspects of applicant's claimed invention.

Heath, Jr. et al (US-6,298,092) discloses a method for adaptively controlling

communication parameters in a wireless system.

Yoshida (US-6,452,964) discloses an adaptive modulation technique related to

applicant's claimed invention.

Conclusion

3.   Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacob Meek whose telephone number is (571)272-3013. The examiner can normally be reached on 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571)272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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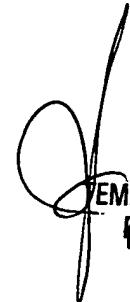
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